UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

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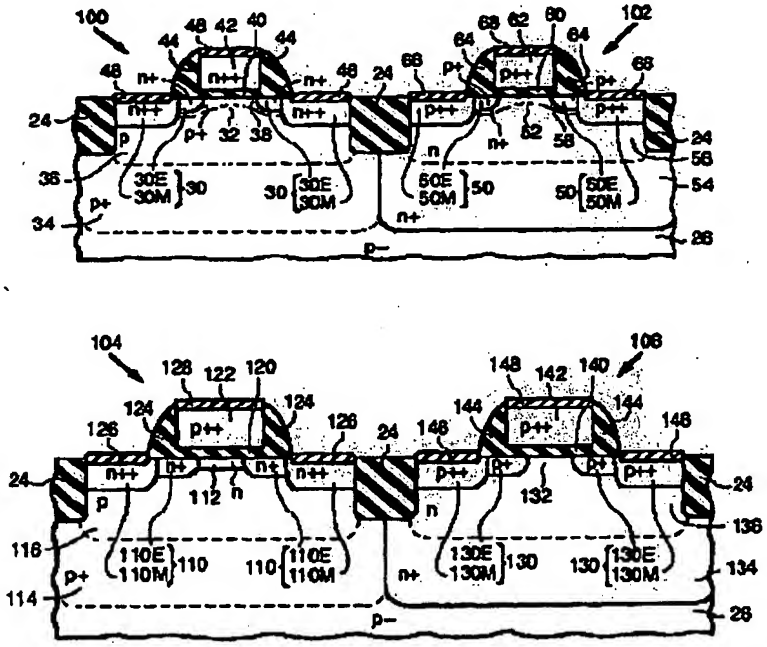
PATENT NO. : 7,176,530 B1
APPLICATION NO. : 10/803203
DATED : February 13, 2007
INVENTOR(S) : Bulucea et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Delete the title page and substitute therefore the attached title page.

The title should read "SEMICONDUCTOR STRUCTURE HAVING N-CHANNEL CHANNEL-JUNCTION FIELD-EFFECT TRANSISTOR".

The drawing on the cover page should be:



This certificate supersedes Certificate of Correction issued July 28, 2009.

[redacted]

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(12) **United States Patent**
Bulucea et al.

(10) **Patent No.: US 7,176,530 B1**
(45) **Date of Patent: Feb. 13, 2007**

(54) **SEMICONDUCTOR STRUCTURE HAVING N-CHANNEL CHANNEL-JUNCTION FIELD-EFFECT TRANSISTOR**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 11 days.

(21) Appl. No.: **10/803,203**

(22) Filed: **Mar. 17, 2004**

(51) **Int. Cl.**
H01L 29/76 (2006.01)

(52) **U.S. Cl.** **257/369**; 257/403

(58) **Field of Classification Search** 257/288, 257/350, 351, 368, 369, 371, 403
See application file for complete search history.

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(57) **ABSTRACT**

A semiconductor technology combines a normally off n-channel channel-junction insulated-gate field-effect transistor ("IGFET") (**104**) and an n-channel surface-channel IGFET (**100** or **160**) to reduce low-frequency 1/f noise. The channel-junction IGFET is normally of materially greater gate dielectric thickness than the surface-channel IGFET so as to operate across a greater voltage range than the surface-channel IGFET. Alternatively or additionally, the channel-junction IGFET may conduct current through a field-induced surface channel. A p-channel surface-channel IGFET (**102** or **162**), which is typically of approximately the same gate-dielectric thickness as the n-channel surface-channel IGFET, is preferably combined with the two n-channel IGFETs to produce a complementary-IGFET structure. A further p-channel IGFET (**106**, **180**, **184**, or **192**), which is typically of approximately the same gate dielectric thickness as the n-channel channel-junction IGFET, is also preferably included. The further p-channel IGFET can be a surface-channel or channel-junction device.

66 Claims, 24 Drawing Sheets